Supply Chain Resilience: The U.S. Ethanol Industry’s Response to COVID-19

Geoff Cooper
Renewable Fuels Association

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2020 Began with Great Promise

• Policy/regulatory wins in late 2019
  • Restoring integrity to Renewable Fuel Standard
  • Removing E15 barriers and infrastructure grants
  • Ethanol/DDGS prioritized in trade negotiations
• Ratification of US-Mexico-Canada Agreement
• China “Phase 1” Agreement includes ethanol/DDGS
• Biofuel tax credits extended
• 10th Circuit Court decision limits RFS refiner waivers
• Strong outlook for U.S. and global economic growth
COVID-19 Changed Everything

*Between March 20 and April 24:*

- **48% collapse** in gasoline demand
  - 45% drop in ethanol blending
  - Record ethanol stocks levels
- **47% drop** in ethanol production
- In mid-April:
  - 75 plants completely idled
  - 73 plants at 50-90% nameplate capacity
  - 56 plants at 90%+ nameplate capacity
- Industry response to demand shock was **rapid and effective**
Market Response to COVID-19

U.S. Gasoline Consumption

U.S. Ethanol Production and Blending

Source: U.S. Energy Information Administration
Market Response to COVID-19

Weekly U.S. Ethanol Ending Stocks

Source: U.S. Energy Information Administration
Recovering from COVID-19

Weekly U.S. Gasoline Consumption

- Avg. = 142
- Low = 78

Weekly U.S. Ethanol Production and Blending

- Avg. = 14.2
- Low = 7.9
- Avg. = 15.8
- Low = 8.2
- Avg. = 12.6
- Avg. = 14.3

Source: U.S. Energy Information Administration
COVID-19 Economic Impacts

• Despite effective & disciplined response, ethanol industry losses have been severe
  • 2020 gross revenue loss due to COVID-19 estimated at $4-5 billion
  • Combination of ~15% lower output (-2.5 BG) and lower prices

• Provisions providing emergency relief funding for ethanol were introduced in both the House and Senate, but not included in first three omnibus stimulus packages
  • Latest COVID package specifies that USDA may “make payments to producers of advanced biofuel, biomass-based diesel, cellulosic biofuel, conventional biofuel, or renewable fuel…produced in the United States, for unexpected market losses as a result of COVID-19.”
We Make More than Renewable Fuel!

- **204** ethanol biorefineries in **26** states
- **Capacity to produce:**
  - **17.5** billion gallons (bg) of ethanol
  - **45-50** million metric tons of animal feed
  - **4-5** billion pounds of distillers oil
  - **6-7** billion pounds of captured CO$_2$
On average, 1 bushel of corn (56 pounds) processed by a dry mill ethanol biorefinery produces:

- 2.92 gallons of denatured fuel ethanol
- 15.86 pounds of distillers grains animal feed (10% moisture)
- 0.80 pounds of corn distillers oil
- 16.5 pounds of biogenic carbon dioxide
COVID-19 Response

• COVID-related reduction in ethanol output had ripple impacts:
  • Reduced CO2 and dry ice production
  • Reduced distillers grains output
  • Reduced distillers corn oil output

• Resiliency and creativity:
  • Emphasis on co-product yields
  • Significant increase in high-purity alcohol production for hand sanitizers and disinfectants
  • Increased focus on CO2 capture
Hand Sanitizer Category: 2020 YTD Dollar Sales Trend

Initial spike in sales caused increased out of stocks in March resulting in a decline in distribution. Once supply chain recovered, consistent elevated levels of sales starting April continued on to end of modeling period.

Source: Information Resources Inc. (IRI)
Monthly U.S. Grain Use for Industrial Alcohol Production

Source: U.S. Dept. of Agriculture
Demand for U.S. ethanol unlikely to recover to peak pre-COVID levels until at least 2022.

U.S. Ethanol Demand Recovery

Source: RFA calculations based on data and projections from U.S. Energy Information Administration, U.S. Census Bureau, and U.S. Department of Commerce; totals may not add due to rounding.